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## REPORT

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**SUPPLEMENT TO  
REPORT NO.**

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Attached is forwarded as received.

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Comment: The experts listed in the Annex to the attached report may be identical with the following: 25X1

- I Sergey Lisitsyn
- II Hannes Seemann
- III Christian Sorge
- IV Wilhelm Strauss
- V Herbert Dominik
- VI Hans Goldberg
- VII Fritz Klaiber
- VIII Bruno Franz Theodor Golecki

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**C-O-N-F-I-D-E-N-T-I-A-L**

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CLASSIFICATION <b>CONFIDENTIAL -</b>		
COUNTRY <b>USSR</b>	REPORT	
TOPIC <b>Remote Control System Developed at MVD Special Object No 14 in Moscow</b>		25X1
EVALUATION	PLACE OBTAINED	25X1
DATE OF CONTENT		
DATE OBTAINED	DATE PREPARED <b>6 May 1955</b>	25X1
REFERENCES		
PAGES <b>2</b>	ENCLOSURES (NO. & TYPE) <b>1 - one sketch,</b>	
	<b>with legend on ditto</b>	25X1
REMARKS		
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1. During the post war years, the Komet remote control system was developed at MVD Special Object No 14 in Moscow. Technical details on the Komet remote control system included the following:
  - a. The B-side of the receiver unit which received the beams reflected by the target had a sensitivity of up to 98 db. About 3 db were required by the selector tuning apparatus. During the laboratory test, the amplification obtained by all units was more than -90 db which exceeded the required specifications.
  - b. The mixer detector was protected against overloading by means of motor driven damping discs in the wave guide forward of the B mixer. Other ways to solve this problem were being considered.
  - c. Both receiver units were equipped with one mutual oscillator. The klystrons used were Soviet made American types and products of the Oberspreewerk in Berlin-Oberschoeneweide.
  - d. Soviet produced silicon crystal diodes which were rather good in quality were used as mixer diodes with the unit. Continuous experiments were made with other types of diodes, but no information was obtained on these activities.
  - e. The I.F. amplifier of the A-side was a four-stage unit with band filters and operated with an I.F. of 40 mc/s, while the I.F. amplifier of the B-side was a six-stage unit with cascade input and series-tuned circuits with an I.F. of 40 mc/s. The band width was 2.5 mc/s and the sensitivity about  $\frac{3}{4}$  V. The 6AG7 type tubes used in the beginning were later replaced by Soviet tubes which were about equal to the 6 AK5.

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- f. The B-antenna rotated at 75 cycles. The synchronization of the A-side was first effected by "switched" impulses and then for a while by phase modulation of the impulse series which simplified the system. The modulation frequency was 30 c/s and the phase modulation ~ 20%. The synchronization of the B-part was effected by mechanical coupling with the antenna motor.
  - g. The ring modulator which had first been used with the phase demodulator was replaced by two polarized Siemens type telegraph relays to effect commutation. The exiting coils were actuated by the reference phase which, in turn, was produced by the phase modulation of the transmitter impulse series or by the antenna motor respectively.
  - h. The ratio of input field intensity front to rear antenna required to actuate the switch over from part A to part B could be effected by any adjustable voltage, produced by the rectification (demodulation) of the selected impulses at about -38 db. No information was available on any measures taken to prevent disturbances of the B-side caused by direct reception from the transmitter.
  - i. It was expected that, as a result of target reflection, deflected polarization would cause disturbances, and countermeasures were therefore considered. Detailed work on this problem was to be started during or after the practical experiments.
  - k. Komet 1 and 2 differed essentially in their electric units. The Komet 3 was only simplified by the omission of some details and showed some improvements. For experimental purposes, the Komet 3 guide system was converted from pursuit curve to lead system. Development work on the Komet 1 was started in 1947/1948, on Komet 2 in 1948/1949 and on Komet 3 in 1949/1950.
  - l. The magnetrons and impulse tubes used for the transmitter were Soviet developments which were closely related to American and English types.
  - m. The central impulse generator unit was equipped with a quartz controlled sine wave generator from which the switching and key impulses were deducted. No multivibrators were installed.
  - n. Measuring instruments for 1-cm wave lengths were not yet available at the institute, but were to be supplied in the summer of 1951 together with component parts for 1-cm units.
2. As far as remembered, the system was designed for a basic speed of the mother aircraft of 900 km/h and a accordingly higher speed of the missile.
  3.  at Special Object No 14, it appeared that work on the same or a closely related project was being continued. 25X1  
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 . For a detailed schematic diagram of the unit, see Annex.

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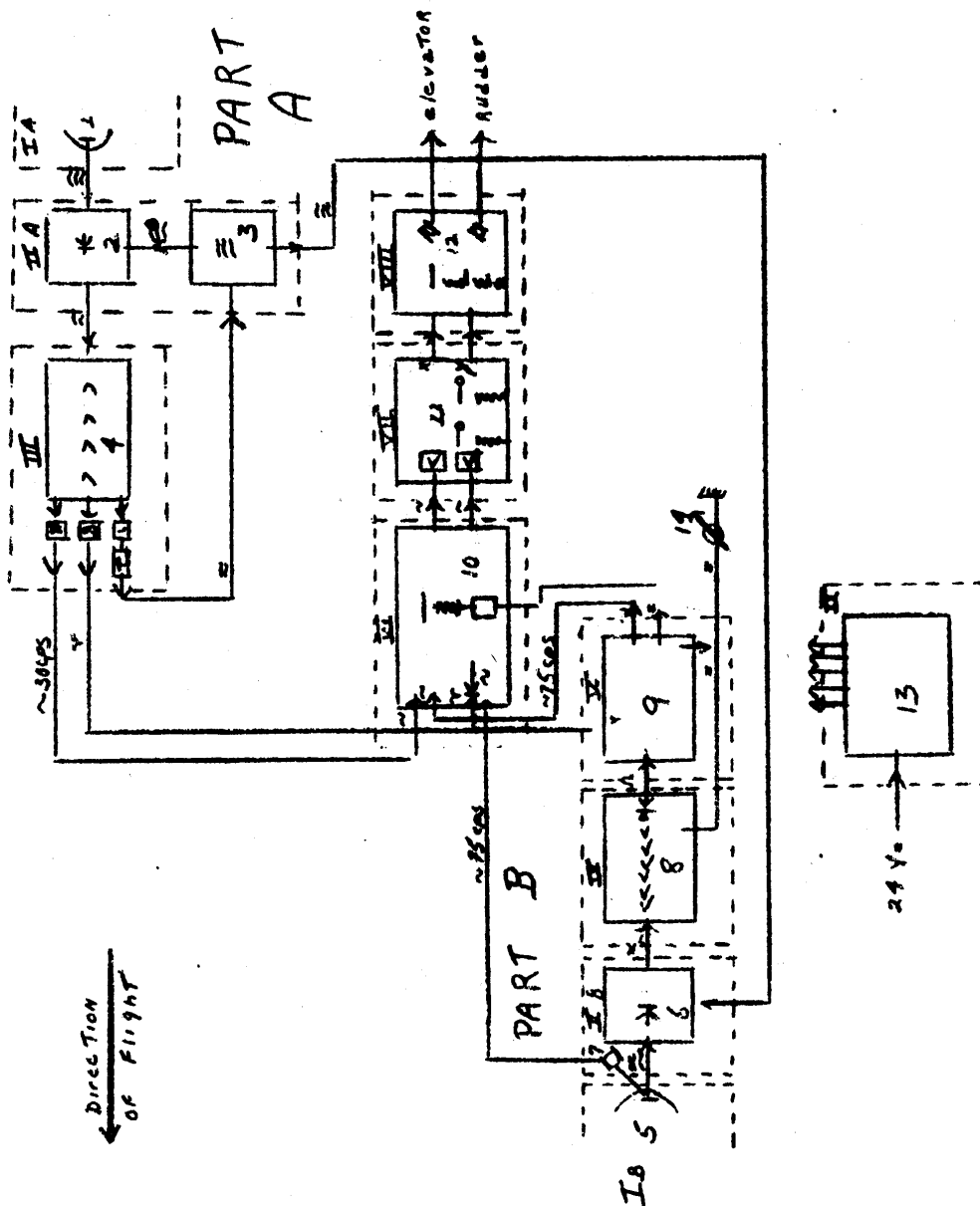
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Annex

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Legend: see next page



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Annex

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Schematic Diagram of the Komet 3 Remote Control System. Unit in the Missile

Legend.

- 1 A-antenna
- 2 A part mixing unit
- 3 Oscillator
- 4 A part IF amplifier
- 5 B antenna
- 6 B part mixing unit
- 7 Complete motor of antenna
- 8 B part IF amplifier
- 9 Selector
- 10 Change over and synchronizing stage
- 11 Phase commutator
- 12 Control stage with servo units for elevator assembly and rudder
- 13 Power unit
- 14 Control instrument

Experts who developed the individual parts:

- I Lisitzin (fnu)
- II Seemann (fnu)
- III Sorge (fnu)
- IV Strauss (fnu)
- V Dominik (fnu)
- VI Goldberg (fnu)
- VII Klaiber (fnu)
- VIII Golecki (fnu)
- IX Goldberg (fnu)

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